

What is claimed is:

1. A method for dry etching a magnetic material comprising the step of subjecting the magnetic material to fine processing by reactive ion etching using, as a reactive gas, carbon monoxide gas containing an added gas of a nitrogen based compound, wherein the ratio of the flow rate of the carbon monoxide gas relative to the total flow rate of the reactive gas is within a range from 1% to 40%.

2. The method for dry etching a magnetic material according to claim 1, wherein

the temperature in the vicinity of the magnetic material is maintained at 300°C or lower, while the magnetic material is subjected to fine processing.

3. A magnetic material, wherein an etching target area thereof is etched using the method for dry etching a magnetic material comprising the step of subjecting the magnetic material to fine processing by reactive ion etching using, as a reactive gas, carbon monoxide gas containing an added gas of a nitrogen based compound, wherein the ratio of the flow rate of the carbon monoxide gas relative to the total flow rate of the reactive gas is within a range from 1% to 40%, and

the width of the etching target area is equal to, or less than, 150nm.

4. The magnetic material according to claim 3, wherein a processed surface is etched to be inclined at an angle

of 45 to 85° relative to a surface of the material.

5 5. The magnetic material according to claim 3, wherein
the etching target area is fine processed under the
condition of the temperature in the vicinity thereof is
maintained at 300°C or lower.

6. A magnetic recording medium comprising the magnetic
material, wherein an etching target area thereof is etched
using the method for dry etching a magnetic material
comprising the step of subjecting the magnetic material to
10 fine processing by reactive ion etching using, as a reactive
gas, carbon monoxide gas containing an added gas of a nitrogen
based compound, wherein the ratio of the flow rate of the
carbon monoxide gas relative to the total flow rate of the
reactive gas is within a range from 1% to 40%, and
15 the width of the etching target area is equal to, or less
than, 150nm.

7. The magnetic recording medium according to claim 6,
wherein

a processed surface is etched to be inclined at an angle
20 of 45 to 85° relative to a surface of the material.

8. The magnetic recording medium according to claim 6,
wherein the magnetic material is fine processed under the
condition of the temperature in the vicinity thereof is
maintained at 300°C or lower.

25 9. A magnetic recording medium being provided with a

magnetic material, wherein the magnetic material has an etching target area having the width thereof is equal to, or less than 150nm and has a processed surface etched to be inclined at an angle of 45° to 85° relative to a surface of the material.

10. A reactive ion etching device comprising:

a diffusion chamber for housing a processing target body;

reactive gas supply means for supplying carbon monoxide gas with an added gas of a nitrogen based compound as a

10 reaction gas into the diffusion chamber and for restricting the ratio of the carbon monoxide gas flow rate relative to the total flow rate of the reactive gas to a value within a range from 1 to 40%; and

temperature adjustment means for maintaining the temperature in the vicinity of the magnetic material in the diffusion chamber at 300°C or lower.